



Indiana Department of Environmental Management

*Protecting Hoosiers and Our Environment Since 1986*



# **The Grand Calumet River Area of Concern Program: An Introduction**

Citizens Advisory for the Remediation of the Environment (CARE)

Public Learning Session

June 19, 2018



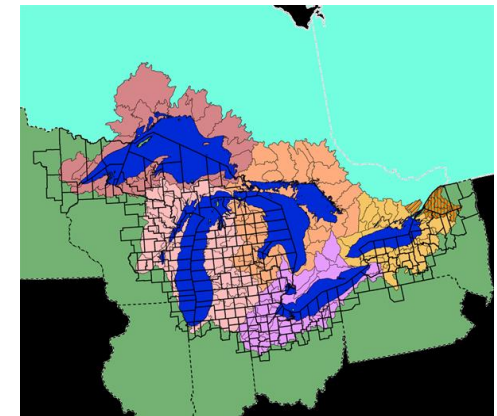
# What is this “Area of Concern”?





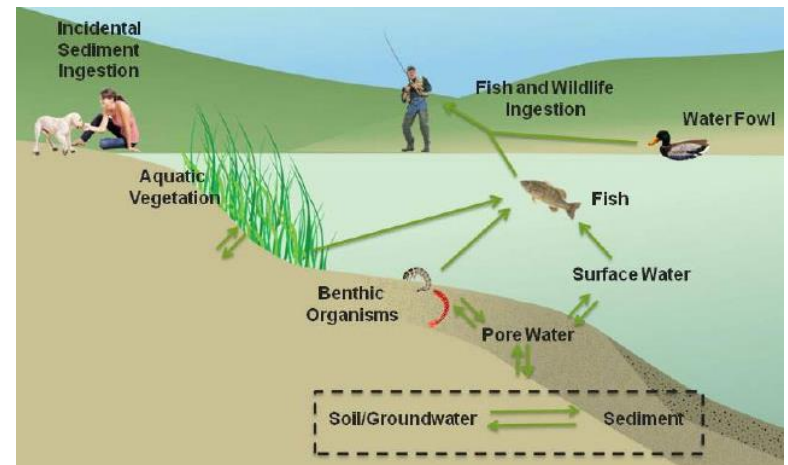
# Great Lakes Water Quality Agreement

- The agreement, signed by the United States and Canada in 1972, recognized that:
  - The Great Lakes are vital to the social and economic well-being of both countries.
  - Both countries needed to cooperate to protect this binational resource.
  - Intense use and modification by people had resulted in lakewide problems.
- In addition, some areas were particularly impacted by human-caused contamination.
  - The agreement was updated in 1987 to address these “Areas of Concern.”
  - These areas had the potential to damage the Great Lakes as a whole.



# Areas of Concern Program

- The United States and Canada have identified 43 Great Lakes “Areas of Concern” (AOCs).
- Focuses on contaminated lakes, rivers, and harbors with a direct connection to the Great Lakes.
- Takes an ecosystem approach to addressing legacy (historical) contamination.
- Restoring these areas will improve the Great Lakes as a whole.





# Beneficial Use Impairments (BUIs)

- Within AOCs, human-caused damage to the physical, chemical, or biological integrity of the watershed has occurred.
- This typically occurs due to legacy sediment contamination.
- This damage shows up as one or more “Beneficial Use Impairments” (BUIs).
  - Generally restrictions on business, municipal, or recreational activities that may be conducted.
- The presence of BUIs shows that basic ecosystem services are compromised.





# How Are AOCs Restored?

- Cooperative process involving federal, state, and local entities in the United States and Canada.
- Once an AOC is listed, a process starts to understand and restore damaged or impaired ecosystem services:
  - Identify which BUIs apply.
  - Develop a Remedial Action Plan (RAP), a blueprint for removing the applicable BUIs.
  - Conduct those actions or projects expected to remove the BUIs.
  - Monitor the ecosystem to gauge progress toward BUI removal.
  - Demonstrate that the BUIs no longer exist.
- Once all BUIs are removed, the area can be delisted (removed from the list of AOCs).
- Monitoring the ecosystem happens throughout the process.

*Monitoring  
Throughout*

Identify AOC



Implement  
Management Actions



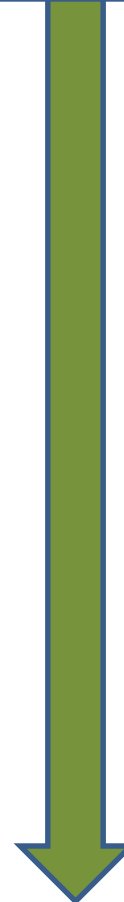
Remove BUIs



Delist AOC



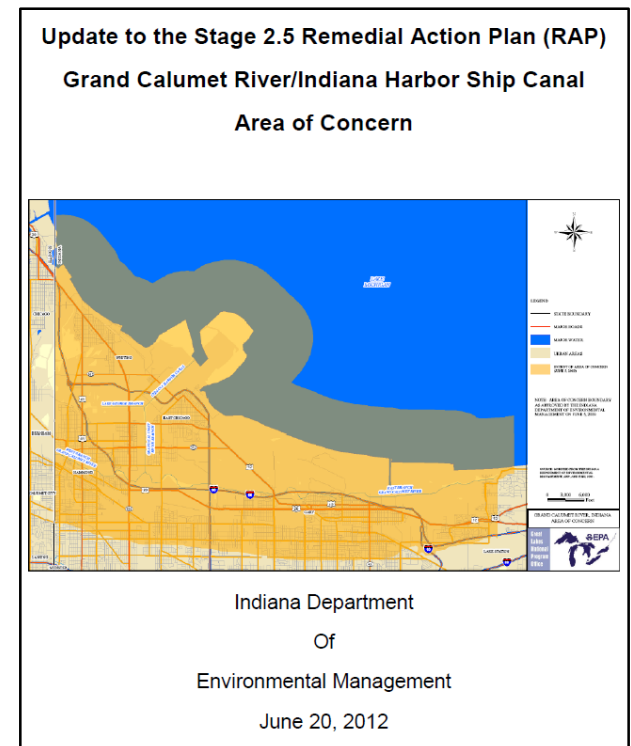
Continue improvements  
through other programs





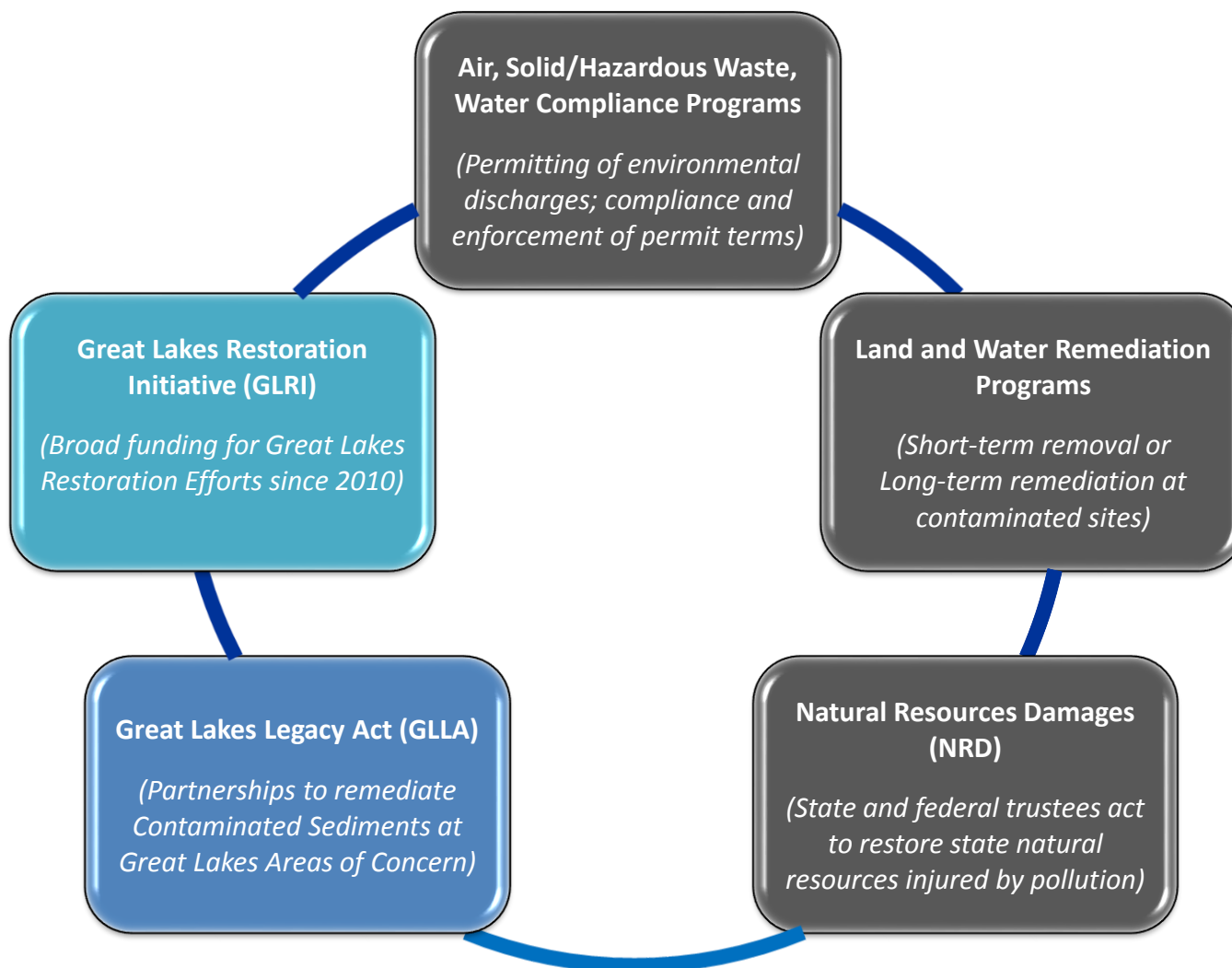
# Remedial Action Plan (RAP)

- Document required of all AOCs to guide the restoration and eventual delisting.
- Produced in multiple stages to describe:
  - 1) The environmental problems which required listing the AOC.
  - 2) The plan for addressing the environmental problems.
  - 3) The evidence that the environmental problems have been addressed and the AOC may be delisted.





# Environmental Programs Work Together In and Out of AOCs







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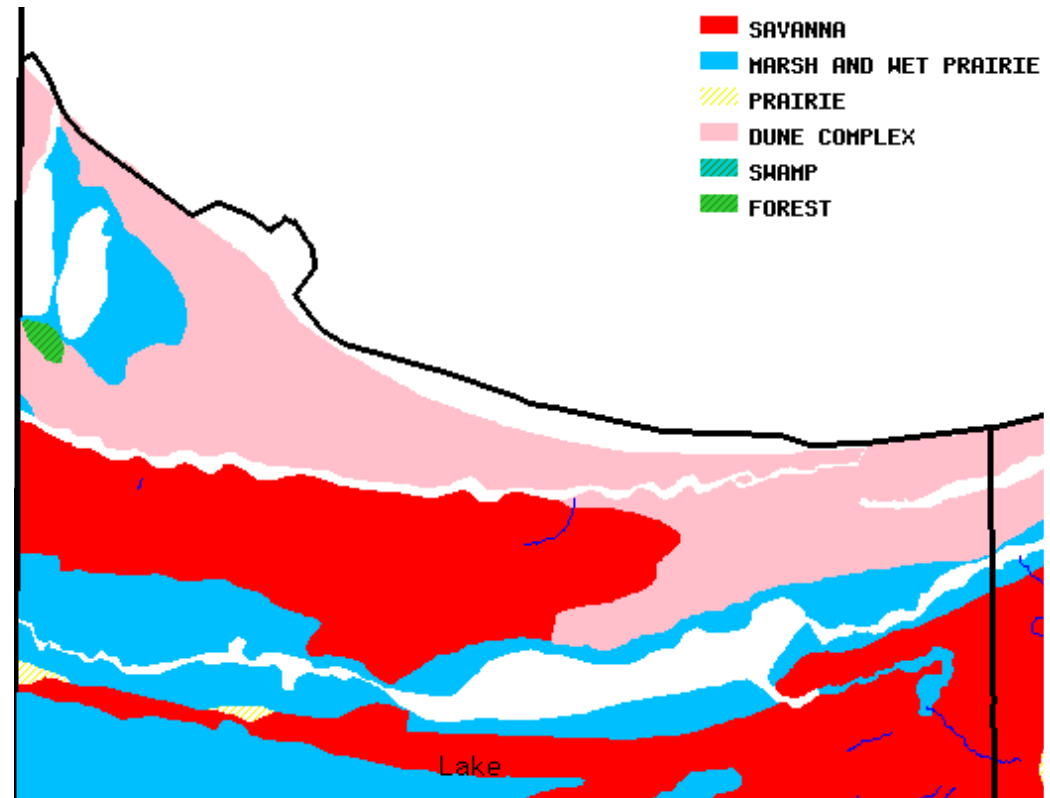


# **Grand Calumet River / Indiana Harbor Ship Canal Area Of Concern**



# The Pre-industrial Calumet Region

- Northern Lake County in the 1830s was mostly made up of the following land types:
  - Dunes
  - Savannas
  - Swamps
  - Marshes
  - Prairies
- The ecosystems of northern Lake County were developed as Lake Michigan retreated over thousands of years.

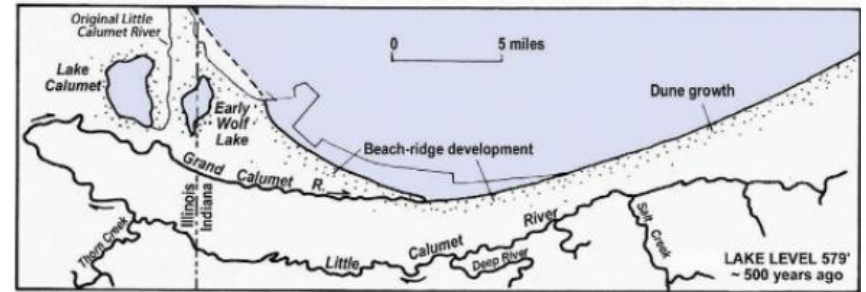


Source: Morton Arboretum



# The Canal Age Shaped the Rivers

- The original Calumet River system followed depressions (swales) left over from ancient Lake Michigan shorelines.
- Canals for shipping and wastewater management (and other construction projects) during the 19<sup>th</sup> and early 20<sup>th</sup> centuries extensively modified the Grand Calumet River.



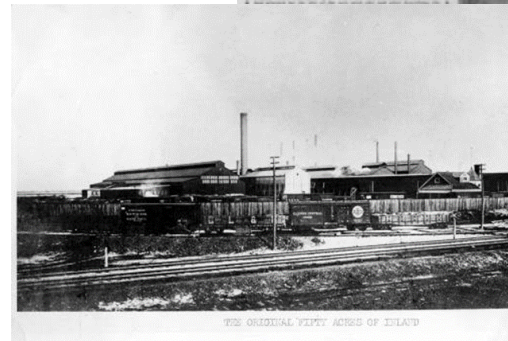
Source: Shoon (2016)



Source: Chicago Line Cruises

# Industry Brought Jobs and Wealth

- In the 20<sup>th</sup> century, heavy industry flocked to Lake County, Indiana:
  - Meat packing
  - Steel
  - Petrochemicals
  - Sand mining
  - Cement
- Industry brought jobs, urbanization, and wealth to Northwest Indiana
  - US Steel's Gary Works Facility alone employed over 30,000 people at its peak in 1970



# And Reshaped the Landscape



Line of South Branch before Excavation. (Photo taken June, 1899.)



South Branch viewed from Junction with Main Canal and West Branch. (Same view as above, taken May, 1910.)  
This photograph shows Collector of Customs Sternberg in his launch.



1938



Today





# Results of Human Activity

Native ecosystems supported at least 18 natural communities;  
Calumet river system flows in hairpin turn, exiting near Marquette Park;  
Dune and swale ecosystem covers over 16,000 acres in Indiana

Harbors, canals, river  
channelization

**River flow reversal;  
Loss of riverine wetlands;  
Disconnection between  
river and other  
ecosystems**

Urbanization,  
Habitat Destruction,  
Invasive Species

**Loss of habitat  
functionality &  
native species;  
Decreased storm water  
management**

Legacy air, land, and  
wastewater pollution

**Contaminated water,  
soil, & sediment; Loss of  
native species; 90% of  
the flow comes from  
wastewater/ storm  
water; fish and wildlife  
consumption advisories**







# CARE Committee

- Former IDEM Commissioner Kathy Prosser formed the Citizens Advisory for the Remediation of the Environment (CARE) in 1990 to advise IDEM on the Remedial Action Plan for delisting the AOC.
- Consists of various stakeholders:
  - Citizens
  - Municipalities
  - Environmental Organizations
  - Industry
- Affiliated federal, state, and local agencies also participate.





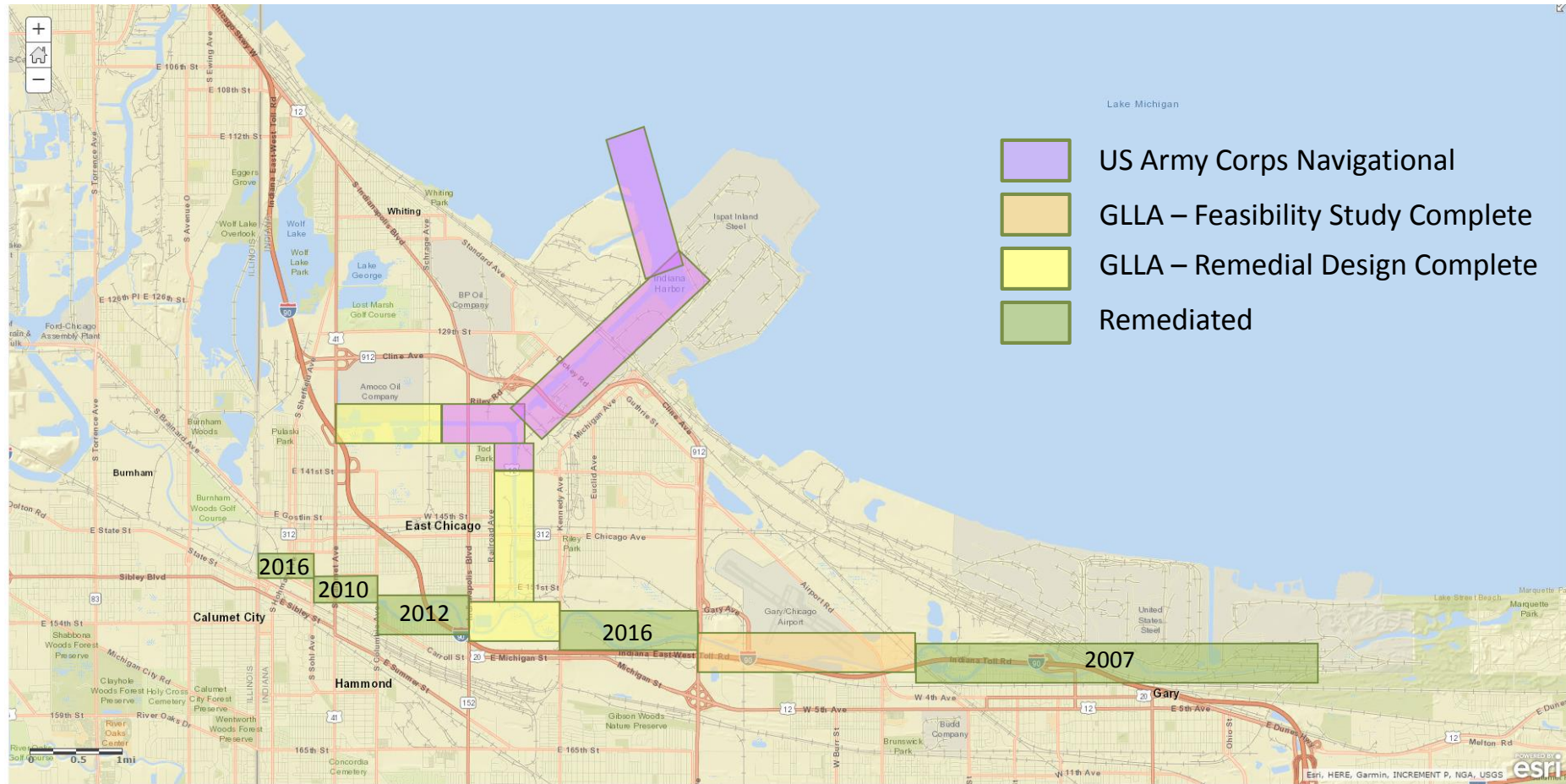
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# What Is Being Done to Remove the Beneficial Use Impairments?

# Contaminated Sediment Management





# Habitat Management

## Lake George Habitat Restoration

- Grant to State DNR
- **Goal:** Restore 80 acres of wetland habitat

## AOC-Wide Long-Term Prescribed Burn Plan

- U.S. Fish & Wildlife Service pass-through grant to local stakeholders
- Development and execution of burn plans
- 26 burn areas covering 860 acres
- **Goal:** Restore beneficial effects of fire to ecosystem

## Riverine Corridor Restoration (Proposed)

- Treat dense stands of invasive weeds at >35 acres along the river
- **Goal:** Remove invasive pressure from restored AOC habitats

## Pine Station Ponds

- US Army Corps feasibility study of habitat restoration options
- **Goal:** Restore injured habitat adjacent to high-quality dune & swale

## Pine Station Meander

- Ecological Assessment by U.S. Fish & Wildlife Service
- Data to feed into US Army Corps feasibility study
- **Goal:** Restore riverine wetland habitat

## Dune/Swale Habitat Restoration

- Grant to IDEM
- **Goal:** Restore 900 acres of native dune and swale, riverine habitats

Image U.S. Geological Survey

7124 ft



# Why is Habitat Being Restored?

- Very little riverine wetland habitat remains to restore in the Grand Calumet River.
- Dune and swale is a globally rare habitat type that evolved together with the river.
- Experts from the United States and Canada, when reviewing Indiana's draft RAP, requested this habitat restoration component be included.

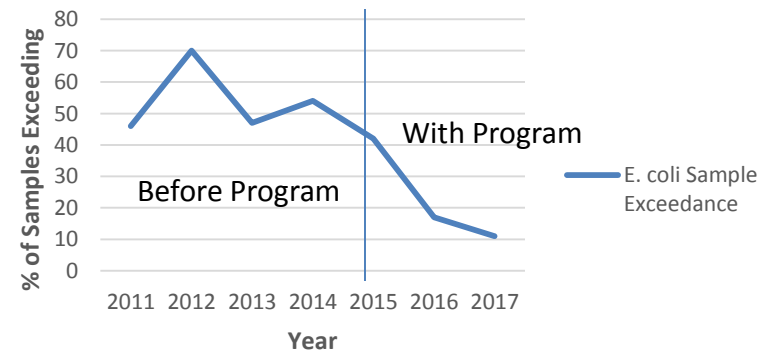


# Nearshore Bird Management Program

- Studies indicate gull droppings contribute to beach advisories and closures at several AOC beaches.
- IDEM has provided funding to Wild Goose Chase, Inc. to patrol and deter nuisance shorebirds at selected AOC beaches (without harming the birds).



Percentage of Water Samples Exceeding State Standards at Jeorse Park Beach









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# What Work Remains to Remove the Beneficial Use Impairments?



# Remaining Sediment Work

- Address PCB contamination “hot spots” in the federal navigation channel and complete dredging
- Address contaminated sediment in areas outside the federal navigation channel:
  - Lake George Branch
  - Indiana Harbor Canal, south of Columbus Drive
  - Grand Calumet River, between Indianapolis Boulevard and Kennedy Avenue
  - “East Branch Phase 2” (Grand Calumet River, Cline Avenue to second railroad bridge east of Buchanan Street)



# Other Remaining Work

- Complete habitat management actions (by 2020)
- Develop management actions for remaining BUIs (by 2020)
- Complete all management actions (by 2022)
- Monitor for BUI removal and eventual delisting





# Getting Involved

- Plant natives, not invasives.
- Refrain from littering.
- Don't feed birds at the beach.
- Visit and learn about nature preserves within the AOC.
- Learn more about the AOC Program:
  - IDEM Website
  - Public Events/Learning Sessions





# Questions?

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